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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/031,446	01/22/2002	Junichi Aizawa	L9289.02105	6628

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EXAMINER	
PAN, YUWEN	

ART UNIT	PAPER NUMBER
2682	7

DATE MAILED: 08/12/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/031,446	AIZAWA ET AL.	
	Examiner	Art Unit	
	Yuwen Pan	2682	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *22 January 2002*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-34* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-34* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date 6.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-3,6-9,14-20,24,and 31-33 are rejected under 35 U.S.C. 102(b) as being anticipated by Furuya (US005577087A).

Per claims 1, 31-33, Furuya discloses an apparatus (could be a base station or a mobile station) within a telecommunication system and a method comprising: storing means for storing a first signal indicating that a bad state has been detected and a second signal indicating that a good state has been detected; determining either states by determining whether a variation in channel conditions is an improvement or a degradation due to fading or shadowing; and controlling means for controlling a communication method by switching between 16QAM and QPSK modulation schemes according to a determination result of the determining means (see column 1 and lines 47-60, column 3 and line 67-column 4 and lines 37).

Per claims 2, 8, and 18 and 34, Furuya further teaches transmitting means for transmitting said determination result to another radio communication apparatus and control means for controlling a communication method according to a determined result transmitted from the radio communication apparatus (see column 2 and line 64-67, figure 5 and items 101, 102).

Per claim 9, it is inherent that information that a determination result has degraded halts transmission for a fixed time because there must be a time duration for the device to switch to

another modulation for next active time slot while the channel condition is no long satisfied, this time duration could be three or six time slots (see column 3 and lines 8-32).

Per claims 3, 6, 7, Furuya further teaches evaluating means for evaluating received signal quality and outputting quality information to said storing means; wherein said storing means stores a first signal and second signal weighted based on said quality information; and said determining means determines a change of communication method based on said first signal and second signal weighted based on said quality information (column 4 and lines 25-37).

Per claim 19 and 20, Furuya further teaches that said controlling means, in the case of information that a determination result has improved, increases the modulation M-ary number and in the case of information that a determination result has degraded, decreases the modulation M-ary number (see column 3 and lines 1-12).

Per claim 14-17, Furuya further teaches that controlling means changes a transmission rate according to a determination, in case of channel condition has improved, increases the transmission rate and in case of channel condition has degraded, decreases the transmission rate (see column 3 and lines 8-11, column 4 and lines 1-11).

Per claim 24, Furuya further teaches that controlling means changes a carrier frequency according to a determination (see column 3 and lines 21-32).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 4 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Furuya (US005577087A) in view of Samaras et al (EP001054526A1).

Furuya discloses an analogous art as recited in claim 1. Furuya doesn't teach that said storing means, when the sum of the stored number of said first signals and number of said second signals reaches a predetermined value, said storing means reports to said determining means the number of said first signals received between the most recent said second signal received and a previously received said second signal; and said determining means, when said number of said first signals reported by said storing means is less than a predetermined value, determines that channel conditions have improved, and if equal to or greater than said predetermined value, determines that channel conditions have degraded.

Samaras teaches said storing means reports to said determining means the number of said first signals received between the most recent said second signal received and a previously received said second signal (see figure 3); and said determining means, when said number of said first signals reported by said storing means is less than a predetermined value, determines that channel conditions have improved, and if equal to or greater than said predetermined value, determines that channel conditions have degraded (see paragraphs 16, and 23, 26).

It would have been obvious to one ordinary skill in the art at the time the invention was made to combine the teaching Samaras with Furuya such that it is more reliable to determine an optimized and robust modulation scheme for the ongoing transmitters and receivers.

5. Claims 10-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Furuya (US005577087A).

Furuya teaches an analog system, a TDMA system based on IS-135 standard) with data rate up to 9.6 Kbps. Furuya doesn't teach any controlling means change a spreading factor and transmission data rate. Both terminologies relate to another wireless system, CDMA in which utilizes spread spectrum technology that a distinct code is assigned to each packet of data. According to IS-95 standard, $Spreadingfactor = \frac{chips\_rate}{data\_rate}$, thus spreading factor is reduced when the data rate is increased, or vice versa. Therefore, it would have been obvious to one ordinary skill in the art at the time the invention was made to utilize CDMA system instead of TDMA system to manipulate the spreading factor such that the data rate would be change according to channel conditions with respect to the selection of spreading factor.

6. Claims 21-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Furuya (US005577087A) in view of Khan et al (US006400954B1).

Furuya has discloses an analogous art as recited in claim 1, Furuya doesn't teach that controlling means changes a coding rate according to a determination. Khan teaches that controlling means changes a coding rate according to a determination (see figure 1, column 2 and l-28). It would have been obvious to one ordinary skill in the art at the time the invention was made to combine the teaching of Khan with Furuya such that a higher transmission rate would be selected by change the coding rate according to the channel conditions.

7. Claims 25-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Furuya (US005577087A) in view of Gerlach et al (US005634199A).

Per claims 25-27, Furuya has discloses an analogous art as recited in claim 1, Furuya doesn't teach controlling means changes a transmit antenna, array directivity and transmit antenna directivity beam width according to channel conditions. Gerlach teaches utilizing an adaptive transmitting antenna array by changing a transmit antenna, array directivity and transmit antenna directivity beam width according to the feedback from mobile stations within the system. It would have been obvious to one ordinary skill in the art at the time the invention was made to combine the teaching of Gerlach with Furuya's system such that corosstalk between two mobile stations in a wireless communications system would be reduced (see column 3 and lines 10-50).

Per claims 28-30, it is inherent that the limited width of transmit antenna directivity beam is depend on the channel condition in the wireless communications system. In order to maintain the quality or transmission rate, the antenna array must either increase the transmission power or change the antenna weight vector.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Yuwen Pan whose telephone number is 703-305-7372. The examiner can normally be reached on 8-5 M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vivian Chin can be reached on 703-308-6739. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Yuwen Pan
August 9, 2004

VIVIAN CHIN
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8/9/04